

REMARKS

The undersigned notes the Amendment submitted July 12, 2005, which the Examiner has indicated is not fully responsive, as set forth on page 2 of the Office Action mailed October 3, 2005. Notwithstanding that the Amendment submitted October 3, 2005, should not have been entered, based on the Examiner's position that the Amendment was not fully responsive, as set forth in Manual of Patent Examining Procedure (MPEP) 714.19(N), the Examiner has apparently entered the Amendment submitted July 12, 2005. In any event, in order to avoid confusion with respect to the status of claims in the above-identified application, all of claims 1-158 previously in the application have been cancelled without prejudice or disclaimer, and new claims 159-185 are being added to the application. Of these newly added claims, claim 159 recites subject matter in original claim 1, and additionally incorporates therein the subject matter of previously considered claims 4 and 5. As claims 4 and 5 were considered on the merits in, for example, the Office Action mailed May 8, 2003, it is respectfully submitted that present claim 159 clearly is directed to the elected invention. Claims 160-163 respectively recites subject matter expressly set forth in claims 2, 3, 10 and 11.

New independent claim 164 recites subject matter expressly recited in claim 12, and additionally incorporates therein the subject matter of original claims 4 and 5. Claims 165-168 expressly set forth subject matter respectively set forth in claims 15-18, but are dependent on claims 164, 164, 160 and 164.

Claim 169 recites a method for producing a metal-polishing liquid of claim 164, reciting processing steps as set forth in previously considered claim 19. Claims 170-174 recite subject matter expressly set forth in claims 20-24, respectively, but are each dependent on claim 169.

Claim 175 recites subject matter expressly set forth in previously considered claim 25, but is dependent on claim 164; and claim 176 recites subject matter expressly set forth in previously considered claim 26, but is dependent on claim 175. Claims 177-185 recite subject matter expressly set forth respectively in claims 33-40 and 48, but are dependent respectively on claims 159, 159, 159, 167, 159, 161, 160, 159 and 164.

It is respectfully submitted that all of the claims presently in the application are directed to the elected invention, and are to be considered on the merits in the present application.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the reference applied by the Examiner in rejecting claims in the Office Action mailed January 12, 2005, that is, the teachings of U.S. Patent No. 5,954,997 to Kaufman, et al., under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that this reference as applied by the Examiner would have neither taught nor would have suggested such a metal-polishing liquid (or liquid material), or such method of forming such liquid/material or of using such liquid/material, as in the present claims, including wherein the liquid/material has a dissolution promoter for the protective film-forming agent, which is a surfactant that is at least one selected from the group consisting of esters, ethers, polysaccharides, salts of amino acids, polycarboxylic acids, salts of polycarboxylic acids, vinyl polymers, sulfonic acids, sulfonates and amides. See claims 159 and 164; note also, for example, claim 169.

In addition, it is respectfully submitted that the teachings of the applied reference would have neither disclosed nor would have suggested the other features

of the present invention as in the dependent claims, including combination of the features discussed previously, and/or additional aspects including (but not limited to) wherein at least a part of the protective film-forming agent is solid, having a mean particle size of at most 100 μm (note, e.g., claims 162, 165 and 174); and/or wherein the liquid material further includes abrasive grains (note, e.g., claims 163, 166 and 178); and/or various materials for the protective film-forming agent (note, for example, claims 184 and 185); and/or additional features of the method of producing the liquid including the dilution and/or use of a diluent (note, for example, claims 169 and 170).

Through use of the presently claimed method, and the presently claimed liquid material and liquid, and further with the presently claimed polishing method, liquid material including components having a high concentration can easily be provided and transported; and a metal-polishing liquid according to the present invention can be readily prepared, at any of various locations, by adding, e.g., at least one diluent, and also by mixing the various components. The liquid material, having a high concentration, has advantages in that costs for producing the liquid can be reduced, and capacity of the tanks for storing, transporting and using the liquid in polishing plants can be reduced.

It must be emphasized that, different from convention polishing agents, according to the present invention a metal-polishing liquid material having a protective film-forming agent, with a high concentration, can be easily and effectively formed; and the metal-polishing liquid of the present invention is readily prepared from the metal-polishing liquid material having a high concentration by diluting the material. The present invention has advantages in that costs for producing the metal-polishing liquid can be reduced, and the capacity of the tanks for storing,

transporting and using the liquid and the liquid material in polishing plants can be reduced. According to the present invention, material for the metal-polishing liquid may have a higher concentration, in accordance with polishing capabilities of the liquid. Note, for example, page 9, lines 12-23 of Applicants' specification.

Kaufman, et al. discloses a chemical mechanical polishing slurry especially useful for polishing copper and copper alloy-containing metal layers associated with a substrate selected from the group including integrated circuits, thin films, multiple level semiconductors and wafers. The slurry includes a complexing agent, at least one oxidizer, at least one abrasive and a film forming agent. See column 1, lines 7-16; and column 4, lines 9-22 and 58-65. The oxidizer used in the slurry is described, for example, at column 5, lines 28-37; and the film forming agent of the slurry is described in this patent at, for example, column 5, lines 44-56. This patent further discloses that the complexing agents of the slurry are used in order to disturb the passivation layer formed on the substrate layer. Note the paragraph bridging columns 5 and 6 of this patent. This patent discloses that other well known polishing slurry additives may be incorporated, one class of optional additives being inorganic acids and/or salts thereof. See column 6, lines 22-31. This patent goes on to describe that in order to promote stabilization of a slurry against settling, flocculation and decomposition, a variety of optional slurry additives, such as surfactants, stabilizers or dispersing agents, can be used. See column 6, lines 34-45. This patent discloses that preferred surfactants include dodecyl sulfate sodium salt, sodium lauryl sulfate, dodecyl sulfate ammonium salt and mixtures thereof. See column 6, lines 62-67. Note also column 7, lines 1-5, describing that the slurry includes an abrasive. See also column 8, lines 35-41. This patent further discloses that, typically, the oxidizing agent and other non-abrasive components are mixed

into an aqueous medium, such as deionized or distilled water, at predetermined concentrations under low shear conditions; and that a concentrated dispersion of the metal oxide abrasive, such as fumed alumina, is added to the medium and diluted to the desired loading level of abrasive. This patent goes on to describe that it is preferred that at least a 2-package system is used, where the first package includes the film-forming agent and any optional additives, and the second package includes the aqueous abrasive dispersion and an oxidizer. See column 8, lines 53-65.

It is respectfully submitted that this reference does not disclose, nor would have suggested, the features of the present invention as discussed previously, including wherein the liquid/material includes a dissolution promoter for the protective film-forming agent, which dissolution promoter is a surfactant which is at least one of esters, ethers, polysaccharides, salts of amino acids, polycarboxylic acids, salts of polycarboxylic acids, vinyl polymers, sulfonic acids, sulfonates and amides, and advantages thereof as discussed in Applicants' disclosure. The contention by the Examiner in the last paragraph on page 3 of the Office Action mailed January 12, 2005, that Kaufman, et al. discloses surfactants including at least one of the materials as in the present claims, the Examiner referring to column 6, lines 30-45 and 60-69 of Kaufman, et al., is respectfully traversed. It is respectfully submitted that the specific surfactants described in Kaufman, et al. include sodium and ammonium salts, and a sulfate, and it is respectfully submitted that the disclosure of surfactants as in Kaufman, et al. would have neither taught nor would have suggested inclusion of at least one of the specified materials in the present claims.

Furthermore, it is emphasized that Kaufman, et al. discloses a two-package system and describes that a concentrated dispersion of the metal oxide abrasive is

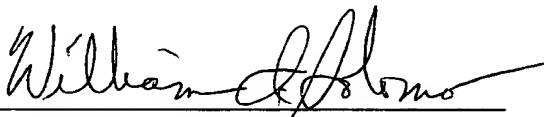
added to the medium and diluted to the desired loading level of abrasive in the final slurry. It is respectfully submitted that such disclosure would have neither taught nor would have suggested the dilution as in various of the present claims, and advantages thereof.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

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Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

By 
William I. Solomon
Reg. No. 28,565

WIS/ksh
1300 N. Seventeenth Street
Suite 1800
Arlington, Virginia 22209
Telephone: 703-312-6600
Facsimile: 703-312-6666